PIETS: Parallelised Irregularity Encoders for Forecasting with Heterogeneous Time-Series

Futoon M. Abushaqra, Hao Xue, Yongli Ren and Flora D. Salim

RMIT UNIVERSITY

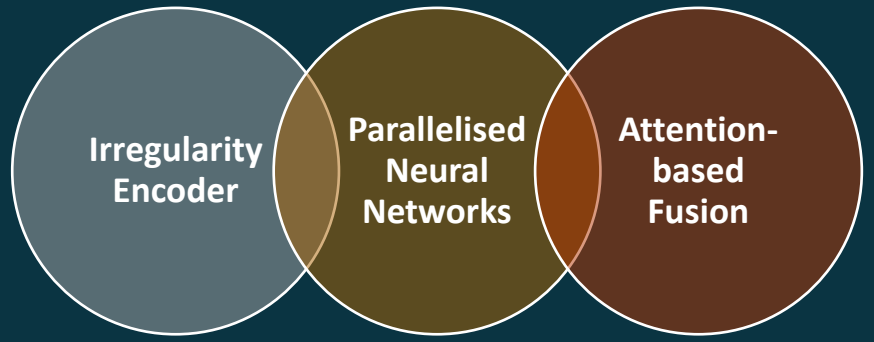
Objectives

Modeling time series with

- Heterogeneity and irregularity
- Information inconsistency
- Extremely large and highly-variable dimensions

Method

PIETS has Three Main Components



- **Encode time-series from multi-source data sets.**
- **Extract inner relations in each data source as well as relations among different data sources.**
- **Doesn't require adding or deleting from the dataset.**
- **Effectively combine the datasets and learn the importance of each feature set.**

2022 Australian Computer Science Week

ICDM 2021 IEEE International Conference on Data Mining 7 – 10 DECEMBER 2021 AUCKLAND NEW ZEALAND

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Experiments

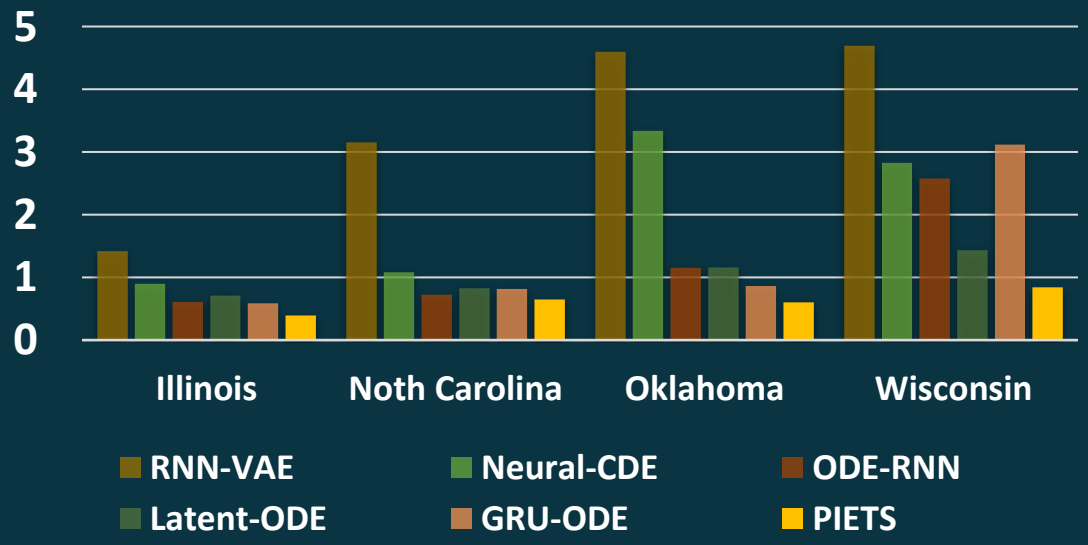
Tested on COVID-19 outbreak

5 data domains - 5 US states

Results

Up-to. 80% Faster Loss Convergence

+23.4% Less MSE Error Compared to state-of-the art models



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